

REMARKS

1. Status of claims

The Examiner is thanked for correcting an inadvertent misnumbering of the claims. Applicants accept the renumbering of claims 37*-44*, as made in their first preliminary amendment, dated February 6, 2002, as claims 35-42. (The use of an asterisk is intended herein to refer to a claim number assigned in one of Applicants's preliminary amendments.) Applicants also point to their second preliminary amendment, dated March 11, 2002, which presented claim 45*. In light of the Examiner's observation, Applicants submit this claim should be renumbered 43. Thus, claims 35-43 are pending.

2. Support for amendment

The amendment of the title is as suggested by the Examiner in the detailed action, p. 4, ¶ 6. The amendment of the paragraph beginning at p. 1, line 1 provides appropriate and updated continuity data as suggested by the Examiner in the detailed action, p. 4, ¶ 7. The amendments at pp. 28, 29-30, 32-33, and 40-41 provide revised citations of Internet addresses, giving exact URLs, bibliographic information, and dates of access thereof by Applicants's representative. The amendment of Table C, p. 53, corrects an inadvertent error, the nature of which and the appropriate correction thereof being apparent to the ordinary skilled artisan. The amendment at p. 36 identifies DNA sequences with SEQ ID NOs corresponding to those submitted by Applicants on March 21, 2002.

The amendment of claim 35 finds support at p. 6, lines 18-28; Table 3B, p. 57; and Table 7, p. 63. The amendments of claims 38-40 find support at p. 7, lines 2-9 (“acid pH values” being pH values less than 7). The amendment of claim 41 finds support at p. 4, line 28 to p. 5, line 4. No new matter has been added by this amendment.

3. *Objection to the application for lack of compliance with sequence rules*

The Examiner objected to the application for failing to fully comply with the nucleotide sequence rules, 37 CFR 1.821-1.825. To overcome this objection, Applicants present a CRF of the sequence listing originally filed on March 21, 2002; a substitute paper copy thereof; an amendment directing entry thereof into the specification at pp. 64-65; an amendment identifying the sequences listed at p. 36 with SEQ ID NOs corresponding to the sequence listing; and a statement that the CRF and paper copies of the sequence listing are the same and no new matter has been added.

4. *Objections to the specification*

First, the Examiner objected to the title as not being indicative of the invention as presently claimed. She suggested a new title (detailed action, p. 4, ¶ 6). Applicants submit an amendment to replace the old title with the title suggested by the Examiner.

Second, the Examiner objected to the specification as not providing appropriate and updated continuity data (detailed action, p. 4, ¶ 7). Applicants submit the amendment at p. 1, line 1 in response thereto.

Third, the Examiner objected to citations of Internet addresses at pp. 28, 30, 32, and 40 (detailed action, p. 4, ¶ 8). Applicants submit amendments of the paragraphs in question,

providing specific URLs, bibliographic data contained therein, and the date on which the URLs were most recently accessed by the Applicants's representative. Applicants's representative submits the content of the URLs accessed by him on February 16, 2004 was publicly available via <http://www.ncbi.nlm.nih.gov> no later than September 11, 1998, based on the inclusion of accession numbers in the international application as filed.

Fourth, the Examiner objected to stray marks in the OD₆₆₀ and glucose columns of Table C (p. 53). Applicants submit the stray marks correct an obvious error, namely, the transposing of the OD₆₆₀ and glucose entries in rows 122.5 and 167. It would be apparent to the ordinary skilled artisan that this error occurred and the intended meaning is as given by the above amendment of Table C.

In light of the above amendments and remarks, Applicants submit the basis for all objections to the specification have been removed.

5. *Objections to the claims*

Claim 41 was objected to for not limiting the subject matter of its parent claim 35. Applicants submit an amendment of claim 41, limiting the subject matter relative to claim 35, and thus submit the basis for the objection to claim 41 has been removed.

6. *Claim rejections under 35 U.S.C. §112*

First, claims 35-42 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Examiner found the terms "lacks ethanol production ability or has a reduced ethanol production ability" and "with respect to wild-type yeast" to be confusing.

By the above amendment, claim 35 recites a yeast strain having, among other features, “reduced pyruvate decarboxylase activity, reduced pyruvate dehydrogenase activity, or both relative to a wild-type yeast of the same strain.” Wild-type yeast has its plain meaning as a yeast found in nature and not modified by human action. Reduced pyruvate decarboxylase activity and reduced pyruvate dehydrogenase activity are defined in the specification at p. 7, lines 23-30. Therefore, Applicants submit claim 35, as amended, is clear.

Second, claims 35-42 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite regarding its recitation of production of a range of lactic acid in terms of g lactic acid per g glucose. By the above amendment, claim 35 recites this production as part of the growing step, and further replaces the word glucose with the term carbon source, as is consistent with the meaning of the claim in light of dependent claim 36.

Third, claims 38-40 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite regarding at what time during the fermentation the recited pHs are required. By the above amendment, Applicants submit these claims are now rendered clear.

Fourth, claims 35-42 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement, on the grounds the specification did not provide support for the range 0.5 g - 1.0 g lactic acid per g carbon source. Applicants respectfully request this rejection be withdrawn, as an upper limit of 1.0 g lactic acid per g carbon source is inherent in the recited processes. Applicants submit these claims now comply with the written description requirement.

Fifth, claims 35-42 were rejected under 35 U.S.C. §112, first paragraph, as lacking enablement for producing 100% lactate (by weight percentage of the carbon source), producing lactate at infinitely low pHs, or both. Applicants submit they have provided working examples

of how to achieve the claimed lactate yields. Tables 3B and 7 report lactate yields from 0.5 g/g carbon source to about 0.881 g/g carbon source. In light of the teachings of the present disclosure, one of ordinary skill in the art would find it a matter of routine experimentation to optimize the claimed processes and generate lactate yields greater than about 0.881 g/g carbon source (up to 1 g/g carbon source, the inherent maximum).

Concerning lactate production at infinitely low pHs, the ordinary skilled artisan would understand that a process such as that recited by, *e.g.*, claim 38 (fermentation from an initial pH less than 7) would not include processes from an initial pH so low as to be toxic to the yeast; nor would it include processes from an initial pH so low that the recited lactate yields cannot be achieved. Determining either a fermentation pH toxic to a yeast, or a fermentation pH at which a lactate yield of 0.5 g - 1 g per g carbon source cannot be achieved from the yeast, is a matter of routine experimentation for the ordinary skilled artisan.

Sixth, claims 35-42 were rejected under 35 U.S.C. §112, first paragraph, as lacking enablement for methods involving the use of yeast strains with reduced ethanol production ability, wherein the reduced ethanol production ability is brought about by other than reducing pyruvate decarboxylase activity or reducing pyruvate dehydrogenase activity. By the above amendment, claim 35 recites reducing pyruvate decarboxylase activity or reducing pyruvate dehydrogenase activity.

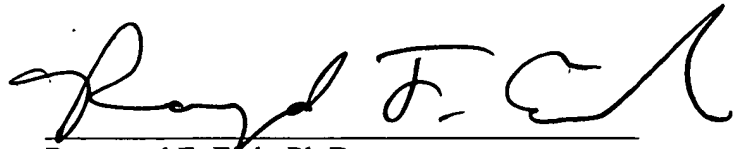
For the above reasons, Applicants respectfully request the rejections of claims 35-42 under 35 U.S.C. §112, first or second paragraph, be withdrawn.

7. *Conclusion*

Applicants respectfully submit all pending claims 35-43 are in condition for allowance. The Examiner is invited to contact the undersigned patent agent at (713) 934-4065 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'Raymund F. Eich', written over a horizontal line.

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